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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/656,596	09/05/2003	Wing K. Luk	YOR920030119US1	7956

24299 7590 01/30/2006

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EXAMINER	
YOHA, CONNIE C	

ART UNIT	PAPER NUMBER
2827	

DATE MAILED: 01/30/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/656,596	LUK ET AL.	
	Examiner	Art Unit	
	Connie C. Yoha	2827	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 January 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-9,11-18,20,21 and 23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-9,11-18,20,21 and 23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *05 September 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Connie C. Yoha

CONNIE C. YOHA
PRIMARY EXAMINER

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. The Amendment filed on 1/11/06 has been entered and are made of record.

2. Claims 1, 3-9, 11-18, 20-21 and 23 are pending.

3. Claims 1 and 3-8 are rejected using new cited reference due to new ground(s) of rejection due to the amended claims under 35 U.S.C. 102(e) as being clearly anticipated by Luk et al, Pub. No. 2005/0030817.

4. Claim 9, 11-12, 14-18, 20-21, 23 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Luk et al, 6768692.

The reason for this rejection has been set forth in the previous action.

Response to Arguments

5 Applicant's argument filed 1/11/06 has been fully considered.

Applicant's arguments with respect to claim 1 and 3-8 have been considered but are moot in view of the new ground(s) of rejection. Examiner uses new cited reference (Lin et al, U.S. Pat. 5587945) to reject claim 1 and 3-8.

Applicant's arguments with respect to claim 9, 11-12, 14-18, 20-21, 23 has been consider but are not persuasive. Therefore, Claim 9, 11-12, 14-18, 20-21, and 23 are still being rejected under 35 U.S.C. 102(b) as being clearly anticipated by Luk et al, 6768692. The reason for this rejection has been set forth in the previous action.

In response to the applicant's argument concerning the claimed 9 and 21 whereby applicant said that Luk (6768692) reference global sense amplifier is not

equivalent to claimed primary sense amplifier. Examiner disagrees with this statement. Examiner like to point out that applicant only claimed the primary sense amplifier having the following functions and features: ".... primary sense amplifiers operationally engaging the bitlines and the global bitlines, have data storage and data write-back capability". It does not claim any other features such as the primary sense amplifier having two amplifications stages. As can be seen in figure 2A, the **global sense amplifier 120** connected to the bitlines (fig. 2B, 210) and global bitlines (fig. 2B, 200), which mean they are operationally engaging the bitlines (fig. 2B, 210) and the global bitlines (fig. 2B, 200) having data storage and data write-back capability (col. 5, line 45-47). Since the global sense amplifier of Luk (6768692) function as defined by the claimed, it is therefore obvious that global sense amplifier 120 of Luk (6768692) is equivalent to the primary sense amplifiers of the instant invention. Luk (6768692) named his sense amplifier a global sense amplifier rather than a primary sense amplifier. Nowhere in the claim 9 and 21 have claimed that the primary sense amplifier have two amplification stages of which applicant have argued Luk's reference lack of.

Claim Rejections - 35 USC ∋ 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 1 and 3-8, 11-12, 14-18, 20-21, and 23 are rejected under 35 U.S.C. 102(e as being anticipated by Luk et al, US. Pub. No. 2005/0030817 A1.

With regard to claim 1, Luk discloses a DRAM comprising: at least one primary sense amplifiers (fig. 1, PSA 150), wherein the least one primary sense amplifier has single ended sensing, has data storage and data write-back capability, and has at least two amplification stages (page 3, paragraph [0030], line 1-8, paragraph [0032], line 1-3) (also with regard to claim 5 and 6); wherein the write-back comprises at least one pass transistor (fig. 2A, 230); a plurality of storage cells (fig. 2A, DRAB array 100) and plurality of bitlines (fig. 2A, 130), with a single ended bitline structure, wherein one storage cell of the plurality of storage cells and the at least one primary sense amplifier are connected by one single bitline of the plurality of bitlines (page 3, paragraph [0032], line 1-9); and a plurality of secondary sense amplifiers (fig. 1, 2nd SA, 160) and a plurality of global bitlines (fig. 1, 140), with a single ended global bitline structure, wherein the at least one primary sense amplifier (fig. 1m 150) and one secondary sense amplifier (fig. 1, 160) of the plurality of secondary sense amplifiers are connected by one single global line bitline of the plurality of global bitlines (fig. 1, 140).

With regard to claim 3, Luk discloses wherein the DRAM further comprises an inherent small voltage swing design (page 2, paragraph [0027], line 1-3).

With regard to claim 4, as far as understood, Luk discloses wherein at least one of the plurality of secondary sense amplifiers comprise at least two amplification stages (page 3, left column, line 4-24).

With regard to claim 7, Luk discloses wherein the customized threshold is dynamically adjusted (page 4, paragraph [0034], line 1-16).

With regard to claim 8, Luk discloses wherein the DRAM is an embedded DRAM (fig. 1, DRAM 100).

Claim Rejections - 35 USC ∋ 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 9, 11-12, 14-18, 20-21, and 23 are rejected under 35 U.S.C. 102(e as being anticipated by Luk et al, U. S. Pat. No. 6768692.

With regard to claim 9 and 21, Luk discloses a DRAM, comprising: a single ended bitline structure, wherein the DRAM has bitlines (fig. 2B, local bitline 210 and Global bitline 200); a plurality of primary sense amplifiers (fig. 2A, 120) operationally engaging the bitlines (fig. 2B, 210) and the global bitlines (fig. 2B, 200), wherein the primary sense amplifiers have data storage and data write-back capability (col. 5, line 43-48), and wherein the primary sense amplifiers are being capable to decouple from the global bitlines (col. 4, line 63-col. 4); a full-wordline I/O structure comprising a reduced address space, wherein the reduced address space has no column address; wherein essentially all memory cell that are simultaneously turned on by any one wordline are being operated on by associated sense amplifiers of the primary sense

amplifiers (col. 5, line 7-8, disclosed only one word-line are active at a given time); wherein the DRAM has memory cells and wordlines (fig. 3, WL 220); a pipelined architecture, wherein the DRAM is functioning in cycles and in each of the cycles an operation can be initiated, and; wherein the pipelined architecture comprise synchronized operations of the single ended bitline structure, of said single ended global bitline structure, of the primary sense amplifiers, and of the full-wordline I/O structure (col. 6, line 5-30) (also with regard to claim 15-17).

With regard to claim 11, Luk discloses wherein a read command and a subsequent writeback command are executed in differing cycles of the cycles (col. 6, line 13-16).

With regard to claim 12, Luk discloses wherein a read command and a subsequent writeback command are executed in a single cycles of the cycles (col. 6, line 23-25) (also with regard to claim 14).

With regard to claim 14, Luk discloses wherein a read command and a write command are executed simultaneously in a single one of the cycles (col. 5,line 58-col. 6, line 12).

With regard to claim 18 and 23, Luk discloses the DRAM is further comprises an inherent small voltage swing design.

With regard to claim 20, Luk discloses wherein the DRAM is an embedded DRAM (2A, DRAM array 100).

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP ∋ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to whose telephone number is (571) 272-1799. The examiner can normally be reached on Mon. - Fri. from 8:00 A.M. to 5:30 PM. The examiner's supervisor, Amir Zarabian, can be reached at (571) 272-1852. The fax phone number for this Group is (703) 872-9306. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 305-0956.

10. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov should you have questions on access to the Private Pair system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

C.Yoha

January 2006

CONNIE C. YOHA
PRIMARY EXAMINER